

**Claims****We claim:**

- 1 1. A method of converting interlaced video signals to progressive video signals,  
2 said method comprising:
  - 3 a) receiving an interlaced video signal representing a luma component  
4 specifying luma lines and a chroma component specifying chroma lines, wherein  
5 said chroma component specifies approximately one-half the number of lines of said  
6 luma component;
  - 7 b) decoding said interlaced video signal and increasing the number of  
8 said chroma lines to approximately the same as the number of said luma lines;
  - 9 c) decreasing the number of said chroma lines of said interlaced video  
10 signal back to approximately one-half of the number of said luma lines, whereby said  
11 increasing of chroma lines is substantially reversed;
  - 12 d) deinterlacing said interlaced video signal, whereby said deinterlacing  
13 results in a progressive video signal representing a luma component specifying luma  
14 lines and a chroma component specifying chroma lines; and
  - 15 e) further processing said progressive video signal.
- 1 2. The method of claim 1, wherein said step (e) comprises making substantially  
2 equal the number of said luma lines and the number of said chroma lines of said  
3 progressive video signal.
- 1 3. The method of claim 2, wherein said step (e) further comprises vertical format  
2 converting said progressive video signal for displaying on a display having a vertical  
3 resolution different from that of said progressive video signal.
- 1 4. The method of claim 2, wherein said step (e) further comprises providing said  
2 processed progressive video signal to an imaging system.
- 1 5. The method of claim 4, wherein said imaging system comprises a liquid  
2 crystal on silicon imager.

1 6. The method of claim 4, wherein said imaging system further comprises a high  
2 definition television receiver.

1 7. The method of claim 1, wherein said interlaced video signal of said step (a) is  
2 a 4:2:0 formatted video signal.

1 8. The method of claim 1, wherein said step (b) results in an interlaced 4:2:2  
2 formatted video signal.

1 9. The method of claim 1, wherein said step (c) results in an interlaced 4:2:0  
2 formatted video signal.

1 10. A method of converting interlaced Moving Picture Experts Group (MPEG)  
2 video signals to progressive video signals, said method comprising:  
3 receiving an interlaced 4:2:0 formatted video signal;  
4 decoding said interlaced 4:2:0 formatted video signal and converting said  
5 video signal to an interlaced 4:2:2 formatted video signal;  
6 re-converting said interlaced 4:2:2 formatted video signal to an interlaced  
7 4:2:0 formatted video signal; and  
8 deinterlacing said interlaced 4:2:0 formatted video signal resulting in a 4:2:0  
9 formatted progressive video signal.

1 11. A method of converting interlaced video signals to progressive video signals,  
2 said method comprising:  
3 a) receiving an interlaced video signal representing a luma component  
4 specifying luma lines and a chroma component specifying non-interpolated chroma  
5 lines;  
6 b) decoding said interlaced video signal and interpolating said non-  
7 interpolated chroma lines to produce a processed chroma component specifying  
8 interpolated and said non-interpolated chroma lines;

- 9           c)       deinterlacing said decoded interlaced video signal based on said luma  
10 lines and said non-interpolated chroma lines, whereby said deinterlacing results in a  
11 progressive video signal representing a luma component specifying luma lines and a  
12 chroma component specifying chroma lines; and  
13           d)       further processing said progressive video signal.

1   12.    The method of claim 11, wherein said step (c) comprises ignoring said  
2   interpolated chroma lines.

1   13.    The method of claim 11, wherein said step (d) comprises making substantially  
2   equal the number of said luma lines and the number of said chroma lines of said  
3   progressive video signal.

1   14.    The method of claim 13, wherein said step (d) further comprises vertical  
2   format converting said progressive video signal for displaying on a display having a  
3   vertical resolution different from that of said progressive video signal.

1   15.    The method of claim 14, wherein said step (d) further comprises providing  
2   said vertical format converted progressive video signal to an imaging system.

1   16.    The method of claim 15, wherein said imaging system comprises a liquid  
2   crystal on silicon imager.

1   17.    The method of claim 15, wherein said imaging system further comprises a  
2   high definition television receiver.

1   18.    The method of claim 11, wherein said interlaced video signal of said step (a)  
2   is a 4:2:0 formatted video signal.

1   19.    The method of claim 11, wherein said step (b) results in a 4:2:2 formatted  
2   video signal which represents at least in part said processed chroma component  
3   specifying alternate said interpolated chroma and said non-interpolated chroma,

4 such that said processed chroma component includes all of said non-interpolated  
5 chroma lines.

1 20. The method of claim 11, wherein said step (c) results in a 4:2:0 formatted  
2 video signal.

1 21. The method of claim 20, wherein said step (d) comprises converting said  
2 4:2:0 formatted progressive video signal to a 4:2:2 formatted video signal.

1 22. A Moving Picture Experts Group (MPEG) decoder comprising a chroma  
2 vertical interpolator configured to receive an interlaced video signal representing a  
3 luma component specifying luma lines and a chroma component specifying non-  
4 interpolated chroma lines, and to decode said interlaced video signal and interpolate  
5 said non-interpolated chroma lines to produce a processed chroma component  
6 specifying interpolated and said non-interpolated chroma lines.

1 23. The Moving Picture Experts Group (MPEG) decoder of claim 22, wherein said  
2 processed chroma component specifies alternate said interpolated chroma lines and  
3 said non-interpolated chroma lines, such that said processed chroma component  
4 includes all of said non-interpolated chroma lines.

1 24. A system for converting interlaced Moving Picture Experts Group (MPEG)  
2 video signals to progressive video signals, said system comprising:  
3 a decoder configured to receive an interlaced video signal representing a  
4 luma component specifying luma lines and a chroma component specifying chroma  
5 lines, wherein said chroma component specifies approximately one-half the number  
6 of lines of said luma component, and to decode said interlaced video signal and  
7 increase the number of said chroma lines to approximately the same as the number  
8 of said luma lines; and  
9 a deinterlacer configured to first decrease the number of said chroma lines of  
10 said interlaced video signal back to approximately one-half of the number of said

11 luma lines, whereby said increase of chroma lines is substantially reversed, and then  
12 to deinterlace said interlaced video signal.

1 25. The system of claim 24, further comprising:  
2 a processor configured to process said deinterlaced video signal for display  
3 on a predetermined imager; and  
4 a liquid crystal on silicon imager for displaying said deinterlaced video signal.

1 26. The system of claim 24, further comprising:  
2 a high definition television receiver configured to further process said  
3 deinterlaced video signal.

1 27. A system for converting interlaced Moving Picture Experts Group (MPEG)  
2 video signals to progressive video signals, said system comprising:  
3 a decoder configured to receive an interlaced video signal representing a  
4 luma component specifying luma lines and a chroma component specifying non-  
5 interpolated chroma lines, and decode said interlaced video signal and interpolate  
6 said non-interpolated chroma lines to produce a processed chroma component  
7 specifying interpolated and said non-interpolated chroma lines; and  
8 a deinterlacer configured to deinterlace said decoded interlaced video signal  
9 based on said luma lines and said non-interpolated chroma lines.

1 28. The system of claim 27, further comprising:  
2 a liquid crystal on silicon imager for displaying said deinterlaced video signal.

1 29. The system of claim 27, further comprising:  
2 a high definition television receiver having a liquid crystal on silicon imager for  
3 displaying said deinterlaced video signal.